Monthly Progress Report
Corrective Measures Study (CMS) for Potential Release Site (PRS) 16-021(c)
October 2002

This report summarizes Los Alamos National Laboratory (LANL) activities completed during October of fiscal year (FY) 2003 on the CMS for PRS 16-021(c), the 260 outfall. Both the activities described in the CMS plan ([LA-UR-98-3918)], approved by NMED-HWB on 9/8/99), and other related activities are described herein.

Description of Activities and Contacts

High Performing Team (HPT) Activities **–** The 260 HPT met on October 21, 2002. Agenda items included an update of ongoing 260 activities, a review of recent geophysics data, a discussion of DQOs for intermediate depth drilling, and a review of the RFI and CMS formats.

LANL representatives provided updates on the CMS sampling investigations, including quarterly sampling and geophysical investigations, the CMS bench and pilot studies, and the drilling. Additional details on these projects are provided below in this monthly progress report and in the September 2002 progress report.

Geophysical results from both the electromagnetic overflight (Fugro) and from Zonge engineering were reviewed. These are both electrical methods that can identify highly-conductive (potentially water-bearing) zones. The Fugro results show a steeply dipping conductive zone just east of R-25 that extend southward along the rim of the TA-16 mesatop. If this zone represents saturation, it is consistent with the presence of water at 700 ft in R-25 and with the absence of water in CdV-R-15-3 and CdV-R-37-2. The Zonge controlled-source auto magnetotelluric (CSAMT) data is still being processed. The single line processed to date indicates heterogeneous vertical conductive structures.

Intermediate depth borehole locations were discussed, using the geophysical results as a starting point. The three locations tentatively agreed upon were: 1) in Canon de Valle west of MDA-P; 2) east of R-25 on the TA-16 mesatop; and 3) near the head of Martin spring canyon in a geophysical anomaly. Drilling logistical considerations will also influence the final placement of these boreholes. A tour of these locations for HWB personnel was tentatively scheduled for Friday 11/22/02. LANL will organize this tour.

A format for the CMS Addendum was discussed. It was agreed that a revision to the last CMS Addendum would be produced that updated the conceptual model and DQOs for drilling and delineated the proposed intermediate depth borehole locations. The body of the text for this document will be less than 30 pages. NMED requested that the contractor reports on geophysics be included as Appendices to this document.

The formats for the RFI and CMS reports were reviewed. NMED expressed concern with including the risk assessment in the RFI Report. LANL will proceed with the current

outline, but if in future HPT interactions it appears that there will be insufficient data to support a risk assessment, it may be deleted from the RFI Report and presented in a separate document.

LANL provided an update on the progress of ITRD. The ITRD program will cease operation next FY due to DOE priority changes. This may negatively affect the CMS, although LANL will continue to interact with Pantex on groundwater HE issues. The ongoing studies of enhanced bioremediation, *in-situ* oxidation and *in-situ* reduction were reviewed. All three studies have yielded promising results. Cost estimates for full-scale deployment at Pantex were discussed. All three technologies would be expensive to deploy.

The next HPT meeting is scheduled for December 2, 2002. Agenda items may include the CMS addendum, CMS bench and pilot results, ecorisk, a data update, and points of compliance.

RCRA Facility Investigation (RFI) Report and CMS Plan– Initial work on the revision to the CMS Addendum was begun.

Best Management Practices (BMPs)– BMPs are inspected quarterly and following significant precipitation events. No BMP repairs were required in October.

CMS Hydrogeologic Investigations– CMS hydrogeologic investigations include ongoing Phase II RFI sampling as well as continuing investigations outlined in the CMS plan.

The ongoing Phase II RFI sampling program includes collecting samples at Martin and Burning Ground spring every other day for stable isotopes. SWSC spring remains dry.

The alluvial and deep wells were checked for presence and level of water. All five alluvial wells in Canon de Valle contained water. No water was present in the three alluvial wells in Martin Spring Canyon. All of the intermediate depth boreholes were dry. A stream profile was completed.

The field screening associated with the fall quarterly sampling was finished.

One sample from each of four precipitation events was collected and archived for analysis during this reporting period.

Preliminary results from the controlled source auto-magneto telluric investigation (CSAMT) were received. The 2-D lines processed to date show steeply dipping conductive zones.

Groundwater modeling to investigate conceptual models and contaminant transport for the deep-perched zone at TA-16 was continued. One aspect of this work that is progressing well is determination of an HE inventory for TA-16-260.

Ecological Risk Pilot–

Data analysis to support the combined MDA-P and TA-16-260 ecorisk evaluations continued. Data from the ecological toxicity sampling were received and are currently being evaluated.

CMS Bench and Pilot Studies–Bench and pilot studies continued in collaboration with the Innovative Treatment Remediation Demonstration (ITRD) Program. The ITRD HE program is focused on two DOE sites: LANL and Pantex. Studies include:

1. A study of the passive barrier technology of Stormwater Management, Inc., which is potentially useful for removing HE and barium from waters.
2. A study of chemical treatment of HE-contaminated soil using zero-valent iron (ZVI). The LANL portion of this study has been completed.
3. At Pantex, a study of in situ anaerobic bioremediation of HE using gas-phase carbon additions.
4. A study of ex situ anaerobic bioremediation of HE-contaminated soils using the W. R. Grace process, which combines anaerobic bioremediation with a ZVI treatment. The LANL portion of this study has been completed.
5. A study of HE composting. Amendments appropriate to northern New Mexico were tested on both clean and contaminated soils. The LANL portion of this study has been completed. The internal report was completed on these studies. It is anticipated that this will be discussed in the HPT and will be an appendix of the CMS Report.
6. A study of immobilization of barium-contaminated sediments from Cañon de Valle. A preliminary study has been completed and further investigations are ongoing.
7. Phytoremediation studies in Cañon de Valle. Native plants are being evaluated for their ability to remove HE from surface waters. Preliminary results suggest that low levels of phytoremediation are occurring in the Burning Ground spring area.
8. Oxidation, reduction, and in-situ bioremediation studies of groundwater contamination at Pantex.

Personnel from Stormwater Management visited the barrier system. They identified a possible problem with leakage within the barium specific resin tank. They will work with Shaw to try to implement a fix for this problem.

Interim Measure **(IM)** –

No activities. The IM Report is in review by the regulators.

RFI and CMS Report –

Work was continued on the background sections of these reports.

Public and Stakeholder Involvement– No activities.

Percentage of CMS Completed

LANL estimates 91 % of the CMS has been completed to date. Note that this percentage does not reflect the deep and potential intermediate wells that will be drilled per the CMS plan addendum.

Problems Encountered/Actions to Rectify Problems

CMS Hydrogeologic Investigations

Problem (1): Questions relating to the quality of data from well R-25 remains a concern to the TA-16-260 team.

Action to Rectify Problem (1): LANL will evaluate the data from the quarterly sampling of the R-25 well to evaluate its reliability.

CMS Bench and Pilot Studies

None

IM

None.

Key Personnel Issues

None

Projected Work for November 2002

RFI Report and CMS Plan

- DQOs for intermediate depth boreholes will be further developed.
- Writing of a CMS Addendum for intermediate depth boreholes.

BMPs

- Inspection of existing BMPs following significant precipitation events will continue.

CMS Hydrogeologic Investigations

- Maintenance of autosamplers
- Checking for levels and presence of water in alluvial and deep wells.
- Continued precipitation monitoring and sampling for stable isotopes.
- Data analysis
- Writing of RFI and CMS reports
- Groundwater and natural attenuation modeling

Ecological Risk Pilot

- Submittal of rodent samples to the laboratories. Continued evaluation of data from macroinvertebrate studies.

CMS Bench and Pilot Studies

- Evaluation of data from Stormwater units. Evaluation of Stormwater media based on literature and contacts with TA-50 personnel.
- Stabilization studies

IM

- Task complete.

Public and Stakeholder Involvement

None anticipated.